

ISOMERIZATION PROCESS FACT SHEET

General– Isomerization is a process that increases the octane number of light gasoline components, n-pentane and n-hexane, which is found in abundance in straight run gasoline.

Texas City Isomerization Unit – Relative to the 1,200-acre size of the Texas City Refinery, the Isomerization unit is relatively small — occupying an area about 160,000 feet square — about the size of a city block. Its capacity is about 40,000 barrels per day, but is generally run at about half that output.

The Refinery's total gasoline output is about 200,000-250,000 barrels per day, about 3% of the nation's requirements. The facility's process units convert about 460,000 barrels of crude oil and other feedstocks into products that include gasoline, jet fuels, diesel fuels and chemical feedstocks.

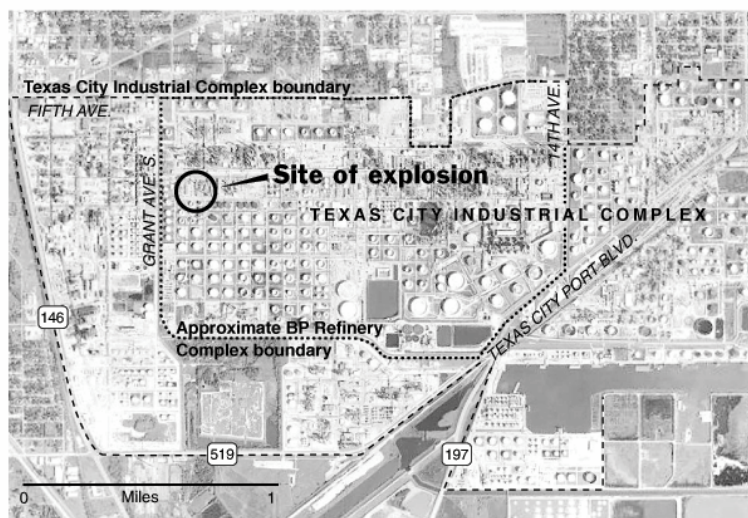
Process – The Isomerization unit charges several light naphtha streams containing predominantly C5 and C6 hydrocarbons from around the refinery. The purpose of the unit is to convert these low octane feeds to higher octane components for blending to unleaded regular gasoline. The feed octane is between 67-70 and the product is about 83-85.

There are four sections to the unit.

- The Raffinate Splitter takes a non-aromatic stream from the Aromatics Recovery Unit and fractionates it into light and heavy components. The Light Raffinate is combined with other streams and fed to the Hydrotreater section. The heavy raffinate is used for gasoline blending or chemical feedstock

- The Hydrotreater removes sulfur and nitrogen compounds from the feeds, which would otherwise poison the Isomerization catalyst.
- The Isomerization reactors convert the desulfurized feeds over a platinum-containing catalyst to higher octane products.
- The Vapor Recovery Unit fractionates the product into Isomerate for gasoline blending

Turnarounds – Some process equipment in isomerization units receives maintenance every one or two years, but the isomerization catalyst is changed out every 10 years. The recent turnaround at Texas City was initiated in late February to change the isomerization catalyst. About 20 workers were required for this two-week job, which included maintenance workers, operators and catalyst contractors.



The New York Times; aerial photograph from AirPhotoUSA, via Keyhole Earthviewer